

ABSTRACT OF THE DISCLOSURE

By utilizing the sequential synthesis afforded reverse micelles, nanocomposite materials can be synthesized which have a diamagnetic core surrounded by a thin shell of ferromagnetic material passivated with a second shell of a diamagnet. Using gold as the diamagnetic material and iron as the ferromagnetic material, nanocomposites can be synthesized where there is a thin layer of the magnetic material, which is passivated and protected from oxidation. In this case, all of the spins of the magnetic layer lie within the surface of the particle.